



Technical Assistance Subproject Report

Project Number: 52307-004
Knowledge and Support Technical Assistance (C-KSTA)
April 2020

Support for Innovation and Technology Partnerships in Asia and the Pacific Subproject 3: High-Level Technology Application to Address Development Challenges

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Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
DMC	–	developing member country
EOI	–	expression of interest
HLT	–	high-level technology
SDCC-KC	–	Knowledge Advisory Services Center
TA	–	technical assistance

NOTE

In this report, "\$" refers to United States dollars.

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KNOWLEDGE AND SUPPORT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 52307-004	
Project Name	Support for Innovation and Technology Partnerships in Asia and the Pacific – High-Level Technology Application to Address Development Challenges (Subproject 3)	Department/Division	SDCC/SDCC-KC
Nature of Activity Modality	Capacity Development Subproject	Executing Agency	Asian Development Bank
Country	REG (CAM, MON)		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
		Total	0.00
3. Operational Priorities		Climate Change Information	
✓	Addressing remaining poverty and reducing inequalities	Climate Change impact on the Project	Medium
✓	Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability		
✓	Making cities more livable		
Sustainable Development Goals		Gender Equity and Mainstreaming	
	SDG 1.5	No gender elements (NGE)	✓
	SDG 3.4		
	SDG 8.10		
	SDG 10.1		
	SDG 11.2		
4. Risk Categorization		Risk Categorization does not apply	
5. Safeguard Categorization		Safeguard Policy Statement does not apply	
6. Financing			
Modality and Sources		Amount (\$ million)	
ADB		0.00	
	None		0.00
Cofinancing		3.00	
	High Level Technology Fund (Full ADB Administration)		3.00
Counterpart		0.00	
	None		0.00
Total		3.00	
Currency of ADB Financing: US Dollar			

I. THE TECHNICAL ASSISTANCE SUBPROJECT

A. Overall Progress of the Technical Assistance Cluster

1. The knowledge and support technical assistance (TA) cluster “Support for Innovation and Technology Partnerships in Asia and the Pacific” was approved on 7 December 2018.¹ The TA cluster will support developing member countries (DMCs) of the Asian Development Bank (ADB) in effectively identifying high-level technology (HLT) solutions for development projects by using a competitive technology innovation challenge approach. It will enable early collaborations with technology providers from the public and private sectors, academia, and research institutes, while building capacity in DMCs to develop sustainable projects and programs with HLT applications. The TA cluster aims to support DMCs’ objective to introduce HLT in projects, drive sector and thematic technology innovations, and provide guidance on how to proceed to project preparation and due diligence. It will also support knowledge sharing related to development-oriented technology innovations and early adoption in Asia and the Pacific.

2. Three subprojects have been defined under the TA cluster: (i) Capturing and Sharing Technology Innovation Knowledge (Subproject 1);² (ii) Energy Sector High-Level Technology Application (Subproject 2);³ and (iii) High-Level Technology Application to Address Development Challenges (Subproject 3). Subproject 1 approved on 18 December 2018 will develop the TechForImpact communication and collaboration platform that will build linkages between various ADB innovation activities. Beta version of the platform was launched in October 2019. A team of experts are working on the content and building a user-centric engagement and collaboration function that will share ADB’s knowledge about technology innovations for development from its own operations and its network of private sector companies. TechForImpact will position ADB as a more innovative and technology focused development bank and will develop engagement and potentially business with partners such as start-ups, technology companies, and impact investment funds. Subproject 2 approved on 1 October 2019 will support DMCs’ objective to introduce high-level technology solutions to energy-related development challenges: (i) increasing clean energy use for heating and cooling, (ii) advancing efficient renewable energy based microgrids, and (iii) efficiently improving energy demand management. Call for proposals for addressing these challenges from HLT providers through the ADB external digital challenge platform⁴ will end on 30 April 2020. Subproject 2 aims to support achieving economic development while meeting nationally determined contributions pledged under the Paris Agreement.

3. Under TA Subproject 3, HLT solutions will be applied to specific development challenges which will benefit DMCs to identify technology-supported innovative solutions. Subproject 3 will support the familiarization of selected DMCs with HLT options.

¹ ADB. 2018. *Technical Assistance Cluster for Support for Innovation and Technology Partnerships in Asia and the Pacific*. Manila. (TA 0039).

² ADB. 2018. *Technical Assistance for Support for Innovation and Technology Partnerships in Asia and the Pacific – Capturing and Sharing Technology Innovation Knowledge (Subproject 1)*. Manila. (TA 9691).

³ ADB. 2019. *Technical Assistance for Support for Innovation and Technology Partnerships in Asia and the Pacific – Energy Sector High-Level Technology Application (Subproject 2)*. Manila. (TA 9815).

⁴ ADB uses Agorize, a leading open innovation challenge. Link to the Call for Proposal for TA Subproject 2 Energy Sector Technology Innovation Challenge: <https://challenges.adb.org/en/challenges/technology-innovation-challenge>.

B. Subproject Outcome

4. Consistent with Strategy 2030's core principle and commitment to Sustainable Development Goals, ADB has been promoting the use of innovative technology and delivering integrated solutions for its DMCs.⁵ The TA will scale up ADB efforts by adopting technology innovation challenge that will allow (i) DMCs to learn about new technology application for addressing development challenges they are facing, receive funding to test technology, and reduce risk for implementation of a new technology; (ii) HLT providers to get familiar with local context and partner with ADB to reduce risk of market entry; and (iii) ADB to identify and support development of new solutions with the private sector, adopt novel ways in engaging with HLT providers in assisting DMCs, and create potential for future lending opportunities.

5. The TA will have the following outcome: High-level technologies for selected areas in DMCs assessed.⁶ The TA subproject will directly support Output 3 of the overall TA cluster, application of HLT solutions in other areas assessed.

C. Subproject Outputs, Methods, and Activities

6. The TA subproject will deliver the following outputs:

7. **Output 1: Development challenges in selected areas identified.** The scale and ambition of Sustainable Development Goals require new modalities, including bringing innovation and HLT, as well as strategic partnerships. HLT can provide DMCs with innovative solutions to meet specific development challenges. HLTs for example of the Fourth Industrial Revolution such as big data for transportation planning; satellite and drone technology for disaster management; artificial intelligence for river flow forecasting, flood management, irrigation, and coastal and marine resource management; internet-of-things for smart farming; blockchain for finance and education; cloud-based banking; and 3D printing for health care are transforming the lives of the people and fast-tracking sustainable development globally. The Fourth Industrial Revolution promises tremendous technological leap in the Asia Pacific region. With adequate support and strengthened institutional capacity, DMCs will maximize the potential of HLT, address their specific development challenges, achieve sustainable development, and participate in an increasingly competitive global market. ADB is well positioned to respond and support DMCs with its comparative advantage using differentiated approach, such as building and sustaining institutional capacities and identifying and leveraging relevant innovations, which are available in other markets already.

8. The TA, in close collaboration with sector and thematic groups and country experts from resident missions, will identify six development challenges which will benefit DMCs to identify technology-supported innovative solutions.

9. **Output 2: High-level technology solutions and applications for selected areas identified.** Six HLT solutions and applications that most effectively address the development challenges from Output 1 will be identified in the appropriate geographic contexts of DMCs. Proposals will be sought from technology providers to respond to the development challenge with an HLT solution. The proposals should include commitment from HLT providers to: (i) co-invest in testing and independent verification results; (ii) provide licenses for commercial models for the

⁵ ADB. 2018. [Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific](#). Manila; ADB

⁶ The design and monitoring framework of TA subproject 3 is in Appendix 1.

implementation period of the project and a plan for potential future scale up; and (iii) maintain a reference site and/or data for future country and ADB projects. Six proposals eligible to receiving up to \$500,000 as grant, will be selected based on approved selection criteria.⁷

10. **Output 3: Proofs of concepts for application of high-level technologies for selected areas produced.** Six HLT solutions will be assessed if and how they can be applied and scaled up in DMCs. The assessment will include a proof-of-concept or pre-feasibility for the HLT application and a clear understanding of how technology transfer can be enabled.

11. **Output 4: Knowledge sharing and support of scale up of high-level technology for selected areas disseminated.** The results will be shared with DMC counterparts in workshops and as case studies through ADB communication channels. The workshops will also be used to build DMCs' capacity to develop specifications for the selected areas' specific development challenges, evaluate HLT proposals, understand the HLT market, share lessons learned from HLT applications, and explore how to scale up HLT innovations.

D. Subproject Cost and Financing

12. The TA subproject is estimated to cost \$3,000,000, which will be financed on a grant basis by the High-Level Technology Fund⁸ and administered by ADB. The selected technology providers will receive a maximum of \$500,000 grant each for the proof of concept and pre-feasibility study, which they can co-finance to supplement costs exceeding their approved grants. The detailed breakdown of expenditure items under the cost estimates and financing plan in Appendix 2 will be negotiated in the grant agreements. It will depend on the scope of the technology proposals but will follow the eligible expenditures under the HLT Fund. The TA subproject expenditure items may include, but are not limited to consulting services, goods, and works for project identification and development, preparation, implementation and operation costs (such as survey, conferences, seminars, workshops, travel, per diem, remuneration, resource person, report, communication, publications, capacity development, and research and policy advice activities)⁹ related to the technology proposals. In case of potential savings of TA budget, additional challenges can be identified and supported.

E. Subproject Implementation Arrangements

13. ADB will administer the TA cluster through the Knowledge Advisory Services Center (SDCC-KC) of the Sustainable Development and Climate Change Department. TA Subproject 3 will be administered by SDCC-KC and each awarded proposal will be implemented by the respective sector and thematic groups and operations departments. Competitive grant selection procedure, which includes a two-stage competitive selection process—Expression of Interest (EOI) and Call for Proposals, will seek HLT providers' solutions to the published development challenges (see paragraph 16).

14. The TA subproject will mainly finance proof of concept and pre-feasibility studies and potentially pilots that may be essential to test and determine the scalability of certain technologies. Knowledge sharing related to the new technology will be required under each awarded proposal. The implementation period of this TA subproject will be from April 2020 until September 2022.

⁷ Selection Criteria for Technology Proposals (accessible from the list of linked documents in Appendix 3).

⁸ Financing partner: the Government of Japan.

⁹ ADB. 2017. Implementation Guidelines for the High-Level Technology Fund (revised as of May 2019). Manila.

15. The implementation arrangements are summarized in the table.

Subproject Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	April 2020–September 2022		
Executing and implementing agency	ADB will be the executing agency of the subproject. SDCC-KC of the SDCC in close collaboration with relevant sector and thematic groups and operations departments will primarily lead the implementation of the subproject and will have the principal role in the administration and supervision of the subproject.		
Procurement ^a	To be procured by ADB		
	Competitive Grant Selection Procedure	Grant Agreements	\$3,000,000
Disbursement	The TA resources will be disbursed following ADB's <i>Technical Assistance Disbursement Handbook</i> (2010, as amended from time to time).		

ADB = Asian Development Bank, SDCC = Sustainable Development and Climate Change Department, SDCC-KC = Knowledge Advisory Services Center, TA = technical assistance.

^a Competitive Grant Selection Procedure (accessible from the list of linked documents in Appendix 3).

Source: Asian Development Bank.

16. **Competitive grant selection.** The TA subproject will provide grants for competitively selected technology proposals in accordance with the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). The process¹⁰ includes the advertisement of the development challenge (identified under Output 1) and the request for EOI, the submission of EOIs, the shortlisting of HLT providers based on the EOI, a Call for Proposals, the submission of a detailed response by the shortlisted providers, and the selection of the most suitable proposal based on criteria listed in the linked documents. The process will use ADB Digital – Challenge Platform¹¹ for open innovation challenges. The submitted proposals will be evaluated by a team of experts from SDCC-KC, relevant sector and thematic groups, the operations departments' sector or thematic experts, Procurement, Portfolio and Financial Management Department, and the HLT fund manager. After selection of a proposal, and confirmation of no-objection from the relevant DMC(s), a grant agreement between the HLT provider and ADB will be signed which sets out the scope and the expected results for this subproject. Each grant will require the endorsement of the head of the respective operations department and the respective country director. The competitive grant selection has been developed together with Sustainable Development and Climate Change Department, Procurement, Portfolio and Financial Management Department, and Office of the General Counsel under TA Subproject 2.

¹⁰ Competitive Grant Selection Procedure (accessible from the list of linked documents in Appendix 3).

¹¹ ADB Digital – Agorize. <https://challenges.adb.org/en>

SUBPROJECT DESIGN AND MONITORING FRAMEWORK

Impact the TA is Aligned with			
Use of advanced and innovative technologies across ADB operations promoted and capacity-building support to DMCs provided ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome High-level technologies for selected areas in DMCs assessed	a. Six new technology solutions assessed to meet development challenges in DMC context by 2022 (2019 baseline: 0)	a. DMC country operations business plans, country partnership strategies	Lack of interest of HLT providers to enter emerging markets limits the potential wide range of approaches to address development challenges
Outputs 1. Development challenges in selected areas identified 2. High-level technology solutions and applications for selected areas identified 3. Proofs of concepts for application of high-level technologies for selected areas produced 4. Knowledge sharing and support of scale up of high-level technology for selected areas disseminated	1a. Six development challenges identified by 2020 (2019 baseline: 0) 2a. At least six HLT solutions identified by 2021 (2019 baseline: 0) 3a. Proofs of concepts or pre-feasibility for six projects completed by 2022 (2019 baseline: 0) 4a. At least 70% of 100 participants in six capacity development workshops (with field visits and on-the-job training) reporting increased knowledge and skills in high-level technology applications in their field of work by 2022 (2019 baseline: 0)	1a. Technology innovation challenge platform (Agorize) 2a. Reports prepared by technology providers and/or consultants 3a. HLT Fund quarterly and annual reports, HLT Fund website, feasibility study reports 4a. HLT Fund quarterly and annual reports, HLT Fund website, publications from seminars and workshops, including ADB working papers, and post-training workshop surveys	Delays in submission of proposals from HLT providers may hinder the timely implementation of projects and/or activities
Key Activities with Milestones 1. Development challenges in selected areas identified 1.1 Develop steps and criteria for crafting development challenges (Q2 2020). 1.2 Meet/coordinate with relevant sectors and thematic groups and operations department (Q3 2020). 1.3 Shortlist and prioritize development challenges (Q4 2020).			

<p>2. High-level technology solutions and applications for selected areas identified</p> <p>2.1 Advertise call for proposals from technology providers for 4–5 weeks on https://challenges.adb.org/en, www.adb.org (Agorize) and social media—LinkedIn (Q4 2020).</p> <p>2.2 Review extended expression of interest and compile shortlist (Q4 2020-Q1 2021).</p> <p>2.3 Request for full proposal (Q1 2021).</p> <p>2.4 Select technology providers using agreed selection criteria and negotiate contract (Q2 2021).</p> <p>3. Proofs of concepts for application of high-level technologies for selected areas produced</p> <p>3.1 Negotiate concurrence from DMC and ensure ownership by operations department and resident mission (Q1 2021).</p> <p>3.2 Hold inception workshop in DMC (Q2 2021).</p> <p>3.3 Implement subproject (Q2 2021–Q3 2022).</p> <p>3.4 Review implementation and verification of technical specification (Q3 2022).</p> <p>4. Knowledge sharing and support of scale up of high-level technology for selected areas disseminated</p> <p>4.1 Hold capacity development workshops, recommend HLT application and related policy changes, and share capacity development requirements with DMC (Q3 2022).</p> <p>4.2 Lessons learned report (Q3 2022).</p> <p>Inputs</p> <p>High-level Technology Fund: \$3,000,000 Potential partner private firms involved: Amount depends on the proposal selected for each subproject</p> <p>Assumptions for Partner Financing</p> <p>Not Applicable</p>

ADB = Asian Development Bank, DMC = developing member country, HLT = high-level technology, Q = quarter, TA = technical assistance.

^a ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila; ADB. 2017. *Establishment of the High-Level Technology Fund*. Manila; and ADB. 2017. *Work Program and Budget Framework, 2018–2020*. Manila.

Source: Asian Development Bank.

SUBPROJECT COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Amount
A. High-Level Technology Fund^a	
1. Studies ^{b,c}	
a. Proof of concept and pre-feasibility study 1	500.0
b. Proof of concept and pre-feasibility study 2	500.0
c. Proof of concept and pre-feasibility study 3	500.0
d. Proof of concept and pre-feasibility study 4	500.0
e. Proof of concept and pre-feasibility study 5	500.0
f. Proof of concept and pre-feasibility study 6	500.0
Total	3,000.0^d

Note: The technical assistance (TA) is estimated to cost \$3 million, of which contributions from the High-Level Technology (HLT) Fund are presented in the table.

^a Financing partner: The Government of Japan. Administered by the Asian Development Bank.

^b The types of costs and total budget to be funded will depend on the scope of the technology proposals. The grant agreements will be output based and will specify the results that the challenge aims to achieve. The TA Subproject aims to comply with the ADB Technical Assistance Disbursement Handbook (2010, amended for time to time). The expenditure items may include, but are not limited to consulting services, goods, and works for project identification and development, preparation, implementation and operation costs (such as survey, conferences, seminars, workshops, travel, per diem, remuneration, resource person, report, communication, publications, capacity development, and research and policy advice activities) related to the technology proposals.

^c TA Subproject 3 will follow the HLT Fund eligible and ineligible expenditure guidelines.

^d Inclusive of 5% ADB administration fee.

Source: Asian Development Bank estimates.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/LinkedDocs/?id=52307-004-TARreport>

1. Competitive Grant Selection Procedure
2. Selection Criteria for Technology Proposals